Persons with Dual Diagnoses of Substance Abuse and Major Mental Illness: Their Excess Costs of Psychiatric Care

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ABSTRACT

Objectives. This study examined the costs of psychiatric treatment for seriously mentally ill people with comorbid substance abuse as compared with mentally ill people not abusing substances.

Methods. Three different sources of data were used to construct client-level files to compare the patterns of care and expenditures of 16 395 psychiatrically disabled Medicaid beneficiaries with and without substance abuse: Massachusetts Medicaid paid claims; Department of Mental Health state hospital inpatient record files; and community support service client tracking files.

Results. Psychiatrically disabled substance abusers had psychiatric treatment costs that were almost 60% higher than those of nonabusers. Most of the cost difference was the result of more acute psychiatric inpatient treatment.

Conclusions. Although the public health and financial costs of high rates of comorbidity are obvious, the solutions to these problems are not. Numerous bureaucratic and social obstacles must be overcome before programs for those with dual diagnoses can be tested for clinical effectiveness. (*Am J Public Health.* 1996;86:973–977)

Introduction

Use of alcohol and street drugs has been widely reported to have adverse consequences for those with serious mental illness, with important implications for treatment of such individuals.[1] Although increasing attention is being given to methods of engaging these patients in special programs that address both psychiatric and substance abuse disorders, virtually no studies have documented the increased costs associated with care provided to those with dual diagnoses. The purpose of this study was to examine the patterns and costs of psychiatric treatment for 16 395 psychiatrically disabled Medicaid beneficiaries in Massachusetts with major mental illness, some of whom have comorbid substance abuse, and to compare these patterns and costs with those of psychiatrically disabled beneficiaries not having problems of substance abuse.

Background

The use of alcohol and street drugs is more common among individuals with serious psychiatric disorders than in the general population.[2,3] The results from the Epidemiologic Catchment Area study showed that very high levels of comorbid substance abuse occur among those with schizophrenia (47%) and bipolar disorders (56%).[4] Substance abuse is also associated with an unwillingness to seek psychiatric treatment, with homelessness, and with increases in psychiatric hospitalization.[5–7] Studies of violent behavior in mentally ill people have also found substance abuse to be a significant predictor, along with lack of medication compliance.[8,9] In addition to the problems known to occur when comorbid substance abuse is identified, another set of problems arises when substance abuse is present but undiagnosed. One of the most worrisome is inappropriate treatment,[10] such as increased doses of psychotropic medication in response to apparent treatment failure due actually to covert substance abuse.

Recent studies have shown that homeless mentally ill adults[11] who have co-occurring substance abuse diagnoses account for at least 20% of the homeless population. Other studies have found a strong correlation between mental illness, substance abuse, chronic homelessness, and housing instability. One example is a study conducted by Drake et al.,[11] who reported that the patterns of care for homeless mentally ill adults include much higher rates of admission and more bed-days among those who abuse substances as compared with those who do not. Perhaps the strongest evidence to date concerning the problems associated with mental illness and comorbid substance abuse has been summarized in an interim report on five McKinney Research Demonstration Programs for homeless mental ill adults.[12] According to this report, participants in the programs "appeared to be unable to find or keep housing primarily because they abuse alcohol or other drugs, not because they have mental illnesses."[12(pii)]

Evidence is mounting to confirm adverse effects on mentally ill people who use even moderate amounts of alcohol. Drake and Wallach[1] found that about 25% of a group of severely mentally ill clients, assessed as moderate drinkers,

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This paper was accepted November 16, 1995.

TABLE 1—Sociodemographic Characteristics of 16 395 Mentally Ill Medicaid Beneficiaries in Massachusetts, by Substance Abuse Status

	Treated for Substance Abuse (n = 1493)	Not Treated for Substance Abuse (n = 4393)	No Substance Abuse (n = 10 509)
Mean age, y	37	40	42
Male, %	49	37	44
Diagnosis, %			
Schizophrenia	31	35	50
Major affective disorder	61	57	43
Other psychosis	8	7	7

had an alcohol use disorder when followed up 4 to 7 years later. The authors concluded that moderate drinking among those with major mental illness carries the risk of eventual substance abuse. This finding is not surprising, according to the authors, given the overlay of damaging effects of substance abuse on the brain dysfunction characteristic of major mental illness.

Previous cost studies have focused on the medical care cost offset predicted to occur when substance abuse is treated. An example is a study conducted by Holder and Blose,[13] who used insurance claim data to assess changes over an 8-year period, comparing the mean monthly cost of all medical care before and after treatment for alcohol abuse. They concluded that there is an offset effect: treatment reduced mean monthly medical costs (including treatment for alcohol abuse) more than 20% during the 4-year follow-up period. In a smaller comprehensive study of the costs of substance abuse in a sample of 75 adults with schizophrenia, Bartels et al.[14] found that current abusers were far more likely to use institutional care and that, overall, they had much higher treatment costs than the comparison groups. Other studies have demonstrated that the social costs associated with substance use among mentally ill people are substantial.[15,16]

Methods

Design

This cross-sectional study investigated the patterns and costs of treatment for 100% of adult psychiatrically disabled Medicaid beneficiaries in the Commonwealth of Massachusetts during fiscal year 1992. The study was based on administrative data (i.e., the paid claims for these individuals). Comparisons were made between three groups: those who had been treated for a comorbid substance abuse disorder, those who showed evidence of a disorder but had not been treated, and those with no evidence of substance abuse.

Study Population

The study included 16 395 treated adult Medicaid beneficiaries in Massachusetts (18 to 64 years of age) who were psychiatrically disabled and had been treated for a major mental illness (an *International Classification of Diseases,* 9th edition, [ICD-9] diagnosis of schizophrenia, major affective disorder, or other psychoses) in fiscal year 1992. The mean age of the study population was 41 years (SD = 12); 88% were White, and 43% were male. About 36% of this population submitted a claim for treatment reimbursement with substance abuse as a primary or secondary diagnosis. The sociodemographic characteristics of the clients are summarized in Table 1. Those with substance abuse, in comparison with those not so identified, were more likely to be male, to be younger, and to have a diagnosis of major affective disorder.

The treated substance abuse group (n = 1493) was defined as individuals with evidence of a claim for substance abuse treatment during the year (in addition to treatment for major mental illness). The untreated substance abuse group (n = 4393) was defined as individuals who had at least one claim with a secondary diagnosis of substance abuse but no claim for substance abuse treatment. All others (n = 10 509) were assumed not to have a substance abuse problem. This method of grouping individuals resulted in a conservative estimate[10] of those with substance abuse because some beneficiaries may actually have had substance abuse problems that were not documented on the claim form.

Data

Three different sources of data were combined into client-level files and used to compare the patterns of care and expenditures of these beneficiaries: Massachusetts Division of Medical Assistance paid claims (Medicaid) for medical as well as mental health treatments, Department of Mental Health state hospital inpatient record files, and community support service client tracking files. These sources provided all of the information necessary to account for the treatment, support, and residential care delivered to these clients, except for self-help substance abuse treatment, which was not included. Client-level longitudinal files were created by clustering all psychiatric care (claims involving a primary psychiatric diagnosis or a psychiatric revenue/procedure code, state hospital admissions, residential treatment, and case management) by type and site of treatment. Substance abuse treatment and medical care were organized similarly and added to each file by type and site of care. Each database is described subsequently.

Medicaid paid claims. We used a two-part algorithm to identify all Medicaid claimants of psychiatric and substance abuse treatment and to extract all of their claims from the Medicaid claims database. First, we selected persons with at least one paid claim that included an ICD-9 diagnosis between 295.00 and 299.90. We then used these individuals' Medicaid identification numbers to extract all of their paid claims submitted during the study period, including claims for treatment of medical disorders. Inpatient episodes were organized to capture room and board, ancillaries, and professional fees associated with each admission. Using the Medicaid membership files, we added variables for date of birth, sex, race, aid category, and residence zip code for each person in the study. Expenditures reported were the paid claims for treatment.

Client inpatient and community support service files. In Massachusetts, the Department of Mental Health maintains computerized files of all client admissions to and discharges from the department's inpatient beds. The client tracking system provides data on client-specific case management hours and department residential placements. These data are reported monthly to the department by case managers. Using unique identification numbers,

we merged these data with the Medicaid claims database. Descriptions of the methods used to calculate per unit costs of Department of Mental Health community support services have been reported elsewhere.[17]

Data reliability. We carried out a pilot study to test the reliability of the Department of Mental Health client data on residential care, case management, and community support services. Residential and community support client tracking data were consistent with vendor records, but case management data were difficult to assess. The latter may underestimate time spent, according to a senior Department of Mental Health administrator who reviewed the data; however, there is no way to cross check this information because case managers fill out the client tracking reports using their own records. The cost of case management, however, was not underestimated here because we used the department's line-item budget (for each region) to calculate the cost (the total number of hours reported for the year for the region was the denominator in fixing the price per unit). The possible consequence of underreporting the time spent was to make the per unit price high, but the fewer hours of management reported resulted in an accurate estimate of the mean cost of providing case management to a client over 1 year.

Measurement of Patterns of Care and Expenditures

Patterns of care. We quantified two different patterns of psychiatric care: (1) the probability of treatment in a general hospital psychiatric inpatient unit or a state hospital, psychiatric residential treatment, or medical treatment and (2) the amount of psychiatric hospital treatment annually (in days). We report these patterns of care for each of the three groups of interest: those with treated comorbid substance abuse, those with substance abuse as an untreated comorbidity, and those with no evidence of substance abuse.

Expenditures. The expenditure data are organized so that psychiatric and substance abuse inpatient, outpatient, and total expenditures are reported separately. We grouped facility-based 24-hour substance abuse treatment with inpatient care rather than outpatient treatment even though, strictly speaking, it is not inpatient treatment. We clustered all inpatient expenses together so that room and board, ancillaries, and attending physician or professional fees were included. Finally, the analyses are summarized in tables that display total costs (i.e., the sum of Department of Mental Health and Medicaid per patient expenditures) and costs broken down by Medicaid costs and costs to the Department of Mental Health.

Outpatient expenditures were defined to include any paid claim in one of three categories of outpatient treatment: a visit to any hospital outpatient department, health clinic, or mental health clinic; a visit to a physician's office; or the use of any one of a set of specialized mental health services, such as psychological testing or day treatment.

TABLE 2—Characteristics of Health Services Use among Mentally Ill Medicaid Beneficiaries, by Substance Abuse Status

Characteristic	Treated for Substance Abuse (n = 1493)	Not Treated for Substance Abuse (n = 4393)	No Substance Abuse (n = 10 509)
Psychiatric admission to general hospital, %	45	36	10
State hospital admission, %	15	11	9
Mean annual bed-days in general and state hospitals	22	19	11
Medical expenditures, %	97	96	86
Residential placement, %	5	6	9

Analyses

Because the data we report were derived from a population rather than a sample, we did not carry out any inferential statistical tests of differences between groups. Instead, we report mean expenditures based on the total number of adults in each group, including both those who did and those who did not use the service reported. The purpose of providing means calculated in terms of the total number of claimants in the group is to allow comparison between groups, taking the total number of claimants in each group into account. Claimant means are similar to rates that are population based. We also report age- and sex-adjusted mean expenditures, by diagnostic category, because of the differences in the distribution of sociodemographic and diagnostic characteristics across the three groups. We used multiple regression analyses to arrive at age- and sex-adjusted figures.

Results

Patterns of Care

Individuals we categorized as having a substance abuse problem (those with a primary or a secondary diagnosis of substance abuse on a claim during fiscal year 1992), in comparison with those not having a substance abuse problem, were four times more likely to be admitted to a hospital for acute inpatient treatment and spent more time hospitalized over the course of a year; however, they were only half as likely to receive residential care. The patterns of care summarized in Table 2 are consistent with what we know about the behavior of substance abusers: they are more likely to be hospitalized, and, after discharge, they are seldom welcomed into residential treatment programs. If placed, they are more likely to lose their placement by violating substance use policies. The substance abusers also had a slightly higher probability of using any medical care.

Costs of Care

Comparisons of costs of treatment in fiscal year 1992 across the three treatment groups show that large differences occurred between those with no known abuse, whose annual mean treatment costs were $13 930, and those with either treated ($22 917 annually) or untreated ($20 049) substance abuse. The largest differences were in general hospital inpatient treatment, with both the proportion of those treated and the number of days hospitalized the greatest within the treated group. Overall, the substance abuse treatment expenditures were a fraction of the psychiatric treatment expenditures. Only a handful in the treated group were admitted to substance abuse treatment facilities, and virtually all received outpatient treatment ($868 annually). There were small differences in the costs and patterns of treatment between those treated and those not treated for substance abuse.

TABLE 3—Comparison of Health Services Expenditures among Mentally Ill Medicaid Beneficiaries, by Substance Abuse Status

Type of Service	Treated for Substance Abuse (n = 1493)		Not Treated for Substance Abuse (n = 4393)		No Substance Abuse (n = 10 509)	
	Users, %	Mean per Claimant, $	Users, %	Mean per Claimant, $	Users, %	Mean per Claimant, $
Department of Mental Health						
State hospital	15	3 934	11	3 605	9	4 049
Residential	5	674	6	941	9	1 362
Case management	16	66	17	66	22	85
Emergency visits	9	27	9	22	7	12
Medicaid						
Hospital/facility based						
Psychiatric	45	8 369	36	6 513	10	1 590
Substance abuse	7	540	. . .	. . .	. . .	. . .
Outpatient						
Psychiatric	97	1 486	99	1 974	99	1 141
Substance abuse	98	868	. . .	. . .	. . .	. . .
Total psychiatric services costs	. . .	14 529	. . .	13 099	. . .	8 227
Total other medical services costs	97	6 952	96	6 927	86	5 691
Total costs	. . .	22 917	. . .	20 049	. . .	13 930

TABLE 4—Age- and Sex-Adjusted Mean Annual Psychiatric Treatment Expenditures among Mentally Ill Medicaid Beneficiaries, by Substance Abuse Status

Diagnosis	Treated for Substance Abuse (n = 1493), $	Not Treated for Substance Abuse (n = 4393), $	No Substance Abuse (n = 10 509), $
Schizophrenia	23 169	19 568	12 350
Major affective disorder	10 049	9 836	4 686
Other psychosis	6 722	5 440	3 455

Treatment for medical problems was nearly universal among those with comorbid substance abuse but somewhat lower among those without (see Table 3), and the mean annual costs were high relative to medical costs in the general US population ($2752 per capita in 1992[18]). These high costs are not surprising because substance abusers have been shown to have high rates of medical treatment,[16] and rates of chronic medical disorders are known to be higher among those with serious mental disorders.[1] We found that individuals without evidence of substance abuse had medical costs that were about $1200 lower than those of substance abusers.

When age and sex adjustments were made to the expenditure data, the differences in total annual psychiatric treatment costs increased between those with and those without substance abuse. As can be seen in Table 4, which summarizes these differences by diagnostic category, there was an increase in total expenditures by about a factor of two when abusers were compared with nonabusers.

Discussion

To summarize our findings briefly, we found that the costs of psychiatric treatment were substantially higher for those who had a comorbid substance abuse diagnosis. The expenditures reported reflect care delivered in a fee-for-service environment before the advent of managed care. Combining administrative paid claims and Department of Mental Health inpatient files had the advantage of capturing relatively complete treatment information about a very large population. However, in this study, we have probably underestimated the number of substance abusers, considering the higher levels of comorbidity reported in other studies. Low rates of detection are a more likely explanation for this than selective coding to take advantage of reimbursement rates (outpatient payment rates are equivalent). We strongly suspect that not all clients who abuse substances are given that diagnosis on a paid claim, and thus they may be included in the non–substance abuse group inappropriately. As a result, our comparisons would be conservative because differences would have increased rather than decreased, if substance abuse had been more precisely identified.

The relatively low expenditures on substance abuse treatment may reflect the reluctance of patients to enter or maintain treatment regimens but are unlikely to reflect differences in diagnostic coding for the purposes of increasing revenues. They might also be explained by the fact that claims data do not record participation in self-help groups, which are a widely used form of support. Many of those in the untreated group may actually participate in such groups. It is also possible that the untreated group included some individuals admitted to a psychiatric inpatient unit for detoxification, although the paid claim records a psychiatric diagnosis first and the substance abuse diagnosis second. This might have occurred if substance abuse led to an acute exacerbation of psychiatric symptoms.

The differences we found may be the result of unmeasured clinical differences in the groups. Our data do not provide enough clinical information to allow adjustments for differences in health status that may account for differences in psychiatric hospital bed-days. Those we identified as non–substance abusers had higher state hospital (nonacute) inpatient and community support (e.g., residential, case management) service costs, suggesting that these individuals are more disabled (we know they are more likely to have schizophrenia) and thus require more institutional and residential treatment. Also, these facilities prohibit the use of alcohol and street drugs, making abuse less likely. Thus, long state hospital stays and greater regulation of abstinence in residential facilities reduce the probability of acute admissions to general hospital psychiatric units.

A cross-sectional study does not permit the long-term follow-up of treated clients to estimate the cost offset of substance abuse treatment. If treated clients were followed over time, one would hope to see reductions in both substance abuse and psychiatric expenditures. These data show no cost offset at all, but treated patients may be the heaviest abusers and the most difficult to treat psychiatrically. Furthermore, successful treatment of dual-diagnosis patients is, unfortunately, the exception rather than the rule. Being treated and no longer abusing are not synonymous. A host of problems, from access to appropriate care to lack of follow-up, discourage even the most determined individuals from seeking treatment.

The message these data convey is that substance abuse is a major public health problem, both economically and socially. Increased detection may help, but detection is only the first step. Recommending "improved" treatment programs is simplistic, given the complex relation between mental illness and substance abuse. Nevertheless, it is an urgent challenge to those who treat seriously mentally ill people to find mechanisms to bridge the gaps that exist between the experts in substance abuse and the experts in mental illness. In many states, different agencies are responsible for treatment programs for each disorder, with few resources to develop and test specialized treatment for those with dual diagnoses. Yet these data suggest that money currently spent on psychiatric treatment could be put to better use in treatment programs that emphasize treatment of both disorders. Beginning with substance abuse detection and treatment training programs for all levels of professional and paraprofessional staff and continuing through the establishment of dual-diagnosis residential programs and long-term support services, state agencies must consider large-scale changes in how they deliver services. A specialized program for dual-diagnosis clients in New Hampshire designed to promote abstinence has reported high rates of remission: 61% of those enrolled in a pilot program had a mean length of remission of 26.5 months. These rates were achieved by including active case manager outreach efforts, medication and psychosocial services, housing support, and other services designed to support abstinence.[19] Other states are testing different mechanisms for coordinating services, such as centralized intake and referral, case management, colocating treatment programs, and interagency network models.[20]

Such programs should improve the treatment of dual-diagnosis patients elsewhere, but the problems of treating this group will not be easily overcome. Individuals who are substance abusers tend to congregate in large cities, where drugs are relatively easy to obtain but housing and mental health services may be relatively less accessible. Mental health professionals derive little satisfaction from working with these very difficult patients, and self-help groups often exclude them because of their reliance on psychotropic medication. These patients rarely seek treatment on their own and, even if admitted to a detoxification facility, may not follow up with rehabilitation.

Although these data are specific to the adult Medicaid population in Massachusetts, it is likely that analyses of other statewide insurance databases, either public or private, would yield similar findings. As concerns about the costs of mental health care increase, the lesson from these data is that substance abuse among those with major mental illness is very costly. What is less certain is that treatment of substance abuse will reduce the annual costs of psychiatric care. It is hoped that longitudinal studies of seriously mentally ill people who are also substance abusers will conclude that treatment designed to end that abuse is cost-effective in the longer term. □

Acknowledgments

This work has been supported by the Massachusetts Department of Mental Health, the Department of Medical Assistance, and National Institute of Mental Health grant RO-1 MH46522.

We acknowledge the editorial assistance of Lydia Ratcliff.

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